



## Occurrence of Odonata in Northern areas of Pakistan with seven new records

Ahmed Zia<sup>1</sup>, Muhammad Ather Rafi<sup>2</sup>, Zakir Hussain<sup>3</sup> and Muhammad Naeem<sup>4</sup>

1. *National Insect Museum, National Agriculture Research Centre, Islamabad – Pakistan.*  
(email: saiyedahmed@yahoo.com)

2. *National Insect Museum, National Agriculture Research Centre, Islamabad – Pakistan.*  
(email: a\_rafi@yahoo.com)

3. *Department of Agriculture, Gilgit – Northern Areas, Pakistan.*  
(email: zakirentomologist@yahoo.com)

4. *Department of Entomology, Pir Meher Ali Shah Arid Agriculture University, Rawalpindi – Pakistan.*  
(email: naeem18ap@yahoo.co.uk)

### Abstract

The study was undertaken to explore the Odonata (Dragonflies & Damselflies) of Northern Areas of Pakistan. The area has an assemblage of high mountains with unlimited water resources in the form of rivers, streams, springs and melted snow. New records of Odonata need to be explored from the area. The surveys were carried out during the months of April – August for four consecutive years (2004 – 2008). Help was also taken from the collection housed at National Insect Museum, Islamabad. Valid names alongwith their synonyms, distribution, habitat description and abundance for all the collected species are discussed in this paper. As total, 21 genera spreading to 37 species of Odonata, comprising of seven new records for the area including one new record for the country have been presented. A checklist for the area has also been included.

**Keywords:** *Odonata, Dragonflies, Damselflies, Northern Areas, Pakistan.*

### Introduction

The Northern areas of Pakistan have an area of 72,496 sq. kms. Physiographically, it includes a set and series of high ranges of mountains (i.e Himalayas, Karakorum and the Hindukush) which are separated by the intervening valleys (Survey of Pakistan, 1997). Odonata of Northern areas are not well investigated in the past. In this regard, a need for comprehensive taxonomic work on Odonata of the area was felt and the present study was undertaken to record the un-explored Odonate

fauna of Northern areas of Pakistan.

Odonates are economically important insects. They are predaceous both as larvae and adult. The larvae are aquatic and are found in all types of water bodies ranging from soaks and seepages to lakes, streams, rivers, temporary pools and water-filled holes of trees (Trueman and Rowe, 2001). Larvae are known to consume tadpoles, fish fry, and mosquito

larvae (Boyd, 2005). Adults normally feed on small insects, including beetles, moths (Silsby, 2001), mosquitoes (Pedigo, 2002) and black flies (Subramanian, 2005). In Pakistan, they are known to feed on jassids, thrips (Ali, 1983), stem borers, leaf folders and leaf hoppers (Najam, 1984). They are highly sensitive to habitat disturbances, thus play a vital role as bio-indicators (Clausnitzer, 2003).

According to Trueman and Rowe (2001) there are 6500 named species of Odonata so far described all over the world. In past, Jehangir (1997) studied the Odonata of Gilgit and Baltistan and recorded 21 dragonfly and 7 damselfly species. Hussain (2006), reported 9 dragonfly species and a single damselfly species from districts Gilgit and Astor. In contrast to above, there is a lot of potential to explore un-seen Odonate fauna of the area.

## Materials and Methods

All the districts of Northern areas of Pakistan were surveyed during four consecutive years (2004 – 2008). As a total 46 different sites under 7 districts (Fig. 1.) have been visited for collecting the adults of Odonata.

Northern areas (Gilgit and Baltistan):

Gilgit Territory:

District: Diamer (Goru, Chillas, Darail, Goner Farm).

District: Astor (Rama, Boomroy, Youghum, Gorikot, Pakora, Moorghulum).

District: Hunzanagar (Hunza, Aliabad, Borath Lake, Sost).

District: Gilgit (Juglote, Danyore, Sultanabad, Chinar Bagh, Gilgit, Kashroat, Sonikot, Chinar Bagh, Aliabad).

District: Ghizzer (Gackhuch Bala, Gackuch Zireen, Saling).

Baltistan Territory:

District: Skardu (Sat Para, Kharmang, Shangrilla, Shigar, Skardu, Gol, Mehdiabad, Hussainabad, Oolding, Newranga, Sundus, Ashkoli).

District: Ghanche (Khaplu, Bara, Balghar, Yougo, Surmo, Kharko, Hushe, Chumik).

Collection was done during the months of April to August (2004 – 2008). Methods of sampling were based on Wahizatul-Afzan *et al.* (2006) with minor additions. When catching over water, dip nets were used. However for collection on wing or while sitting over any dry surface or vegetation, aerial netting was done. The collected specimens were killed in glass bottles containing cotton swab moistened with ethyl acetate. The killed specimens were then shifted to paper envelopes for bringing them to laboratory. The preservation methodology was based on Orr (2003). Adults were softened by giving them a water bath in hot water, after softening they were properly set by using setting boards. The collection was then identified under microscopes {Labomet CZM4 (4X)} following the taxonomic keys of Fraser, (1933 – 34) and Subramanian (2005). The identified specimens have been deposited in National Insect Museum, NARC – Islamabad.

## Results

The surveys revealed a collection of 37 species of Odonata including 28 Anisopterous species spreading to 15 genera and 09 Zygopterous species spreading to 6 genera (Table 1). As a whole seven species viz. *Sympetrum fonscolombei*, *S. commixtum*, *S. meridionale*, *Orthetrum taeniolatum*, *O. glaucum*, *Mortonagrion gautama* and *Libellago greeni* are recorded for the first time from this area. Amongst these *Mortonagrion gautama* is new to the country record. Abundance of species was also observed, which showed that

*Crocothemis servilia* (Anisoptera) and *Ischnura forcipata* (Zygoptera) are the most common and abundant species of the area, recorded from 16 and 23 different localities respectively. However amongst Anisoptera (*Aeschna juncea*, *Ophiogomphus reductus*, *Diplacodes lefbvrei*, *Orthetrum taeniolatum* and *Palpopleura sexmaculata sexmaculata*) and Zygoptera (*Libellago greeni* and *Mortonagrion guatama*) appeared to be less common or rare and were recorded from single locality only.

Discussion

The Northern areas of Pakistan are

bestowed upon with variable habitats having lot of water streams and springs. Further collection surveys can unhide the existing but un-explored species of the area.

Acknowledgments

The authors are thankful to Mr. Muhammad Irshad (Consultant, National Insect Museum, Islamabad-Pakistan) for his thought provoking guidance during the whole collection trips to Northern areas of Pakistan. Also the services provided by National Insect Museum, Islamabad in exact collection and identification of Odonata are highly appreciable.



Fig.1: Map - Northern areas of Pakistan showing all the surveyed localities.



Table 1: Collected species of dragonflies along with their synonyms, distribution and habitat description.

S.No.	Scientific names	Synonyms	Distribution in Northern areas	Habitat description
	<b>Aeshnidae Rambur, 1842</b>			
01.	<i>Aeshna juncea</i> Linnaeus 1758	<i>Libellula juncea</i> , Linnaeus, 1758 <i>Aeshna Americana</i> Bartenev, 1929	Gilgit (Astor (Rama, Boomroy)).	Collected from standing water spots with lot of grassy vegetation
02.	<i>Anax immaculifrons</i> Rambur, 1842		Baltistan (Ghanche (Balghar, Kharko, Yougo, Sumo), Skardu (Shigar, Hussainabad, New Ranga, Olding, Sundus)).	Collection was made from poorly vegetated banks of slow running water streams, some specimens were also collected while sitting on small rocks within water and from small bushes near streams.
03.	<i>Anax nigrolineatus</i> Fraser, 1935	<i>Anax bacchus</i> Martin 1908 <i>Anax guttatus</i> 1921 <i>Anax fumosus</i> 1923 <i>Anax nigrolineatus</i> 1935	Gilgit (Diemer (Goru), Astor (Rama)), Baltistan (Skardu (Gackuch Bala)).	Found flying along running water, field areas and from the marshy spots.
04.	<i>Anax parthenope</i> Selys, 1839	<i>Aeschna parthenope</i> Selys, 1839 <i>Anax julius</i> Brauer, 1865 <i>Anax bacchus</i> Hagen, 1867 <i>Anax major</i> Gotz, 1923 <i>Anax parisinus</i> Rambur, 1842 <i>Anax geyri</i> Buchholz, 1955 <i>Anax jordansi</i> Buchholz, 1955	Gilgit (Gilgit (Juglote, Darel, Chinarbagh, Juglote, Kashroet)), Baltistan (Skardu (New Ranga), Shegar	It is a strong flier and was collected from about 1000 ft. altitude. The spots were having both streams and springs water.
	<b>Cordulegasteridae Calvert, 1893</b>			
05.	<i>Cordulegaster brevistigma</i> Selys, 1854	<i>Anax bacchus</i> 1908 <i>Anax guttatus</i> 1921 <i>Anax fumosus</i> 1923 <i>Anax nigrolineatus</i> 1935	Baltistan (Ghanche (Balghar)), Gilgit (Gilgit (Chinar Bagh), Hunzanagar (Sost)).	Found among tall and high vegetation beside water sources.
	<b>Gomphidae Rambur, 1842</b>			
06.	<i>Ophiogomphus reductus</i> Calvert, 1898	<i>Ophiogomphus forficula</i> Okumura, 1937	Baltistan (Skardu (Shangrila)).	A single male and a female was collected while mating at the edges of stagnant weedy water spot near Shangrila Lake.
	<b>Libellulidae Rambur, 1842</b>			
07.	<i>Acisoma panorpoides panorpoides</i> Rambur, 1842	<i>Acisoma ascalaphoides</i> Rambur, 1842 <i>Acisoma inflata</i> Selys, 1882 <i>Acisoma variegatum</i> Kirby, 1898	Gilgit (Diemer (Chillas)).	Specimens were collected as they were sitting on small rocks within and around water spots.
08.	<i>Crocothemis erythraea</i> Brulle, 1832	<i>Libellula erythraea</i> Brullé, 1832 <i>Libellula rubra</i> de Villiers, 1789 (nec Müller, 1764) <i>Libellula ferruginea</i> Vander Linden, 1825 (nec Fabricius, 1775) <i>Libellula coccinea</i> Charpentier, 1840 <i>Libellula inquinata</i> Rambur, 1842 <i>Crocothemis chaldaea</i> Morton, 1920	Baltistan (Ghanche (Balghar, Kharko, Sumo), Skardu (Shigar, Olding, Shangrila)); Gilgit (Hunza).	The species was found among the grasses and bushes present beside standing water lake and along slow moving water streams in different areas

Table-1: Continued

S.No.	Scientific names	Synonyms	Distribution in Northern areas	Habitat description
09.	<i>Crocothermis servilia</i> Drury, 1773	<i>Libellula servilia</i> Drury, 1773 <i>Libellula ferruginea</i> Fabricius, 1793 <i>Libellula soror</i> Rambur, 1842 <i>Crocothermis reticulata</i> Kirby, 1886	Baltistan {Ghanche (Balghar, Kharko, Yougo, Khaplu), Skardu (New Ranga, Shigar, Hussainabad, New Ranga, Sundus, Bara, Shangrilla, Skardu, Oolding)}, Gilgit {Gilgit (Danyore, Juglote), Diamer (Chillas)}.	Found flying over fast running water streams, sitting on submerged grasses, swampy places along banks of streams.
10.	<i>Diplacodes lefebvrei</i> Rambur, 1842	<i>Libellula lefebvrei</i> Rambur, 1842 <i>Libellula parvula</i> Rambur, 1842 <i>Libellula flavistyla</i> Rambur, 1842 <i>Libellula tetra</i> Rambur, 1842 <i>Libellula concinna</i> Rambur, 1842 <i>Libellula morio</i> Schneider, 1845 <i>Diplacodes unimaculata</i> Förster, 1906 <i>Diplacodes limbata</i> Fraser, 1949	Baltistan {Skardu (Oolding)}.	Caught from the margins of weedy ponds.
11.	<i>Libellula quadrimaculata</i> Linnaeus, 1758	<i>Libellula quadripunctata</i> Fabricius, 1781 <i>Libellula maculata</i> Harris, 1782 <i>Libellula ternaria</i> Say, 1839 (part) <i>Libellula quadrimaculata asahinai</i> Schmidt, 1957 <i>Libellula relicta</i> Belyshev, 1973	Baltistan {Ghanche (Kharko, Yougo), Skardu (Shigar, Hussainabad, Sundus, Bara)}, Gilgit {Astor (Rama, Boomroy)}.	It is mountaneous species and was recorded from standing water ponds. Some of the specimens were collected while they were perching on the long grassy vegetation.
12.	<i>Orthetrum anceps</i> Schneider, 1845	<i>Libellula anceps</i> Schneider, 1845 <i>Libellula ramburii</i> Selys, 1848	Baltistan {Ghanche (Balghar, Kharko, Yougo, Khaplu, Surmo), Skardu (Shegar, Hussainabad, New Ranga, Sundus)}, Gilgit {Diamer (Chillas), Gilgit (Chinar Bagh, Juglote)}.	Collection was done from fresh water streams and grassy vegetation around spring water ways. Specimens were also found sitting on dead bushes and rock stones.
13.	<i>Orthetrum brunneum brunneum</i> Fonscolombe, 1837	<i>Libellula brunnea</i> Fonscolombe, 1837	Baltistan {Ghanche (Balghar, Khaplu), Skardu (Hussainabad, Sundus, Shangrilla, Skardu, Shigare, Ashkoli)}, Gilgit {Gilgit (Juglote, Chinarbagh, Danyore, Kashroat)}.	Collection was done from standing as well as from moving water of streams and springs.
14.	<i>Orthetrum cancellatum</i> Linnaeus, 1758	<i>Libellula cancellata</i> Linnaeus, 1758	Baltistan {Ghanche (Balghar, Yougo, Surmo), Skardu (Shigar, Sundus, New Ranga, Shangrilla, Olding)}.	Collected from miscellaneous spots i.e. water lakes, from weeds growing on the banks of very slow running water ways and from water standing in empty tree holes and other pits with water.
15.	<i>Orthetrum chrysostigma luzonicum</i> Burmeister, 1839	<i>Libellula chrysostigma</i> , Burmeister, 1839 <i>Libellula barbarum</i> Selys, 1849 <i>Orthetrum todii</i> Pinney, 1970	Gilgit {Gilgit (Juglote)}, Baltistan {Skardu (Shangrilla)}.	Collected from spring water spots with a lot of lush green vegetation growing around it.
16.	<i>Orthetrum glaucum</i> Brauer, 1865	<i>Libellula glaucum</i> Brauer, 1865 <i>Orthetrum gangi</i> Sahni, 1965 <i>Orthetrum glaucum</i> Kirby, 1890 <i>Orthetrum nicevillei</i> Kirby, 1894	Baltistan {Ghanche (Balghar, Yougo), Skardu (Oolding)}, Gilgit {Gilgit (Chinarbagh), Diamer (Chillas, Darail), Astor (Boomroy)}.	Found preying over minute insects hiding between grassy bushes around fresh water sources.
17.	<i>Orthetrum pruinatum neglectum</i> Burmeister, 1839	<i>Libellula pruinosa</i> Burmeister, 1839 <i>Libellula neglecta</i> Rambur, 1842 <i>Libellula petalura</i> Brauer, 1865 <i>Libella clelia</i> Selys, 1878 <i>Orthetrum schneideri</i> Forster, 1903	Baltistan {Skardu (Shegar), Mehdiabad}, Gilgit {Astor (Yougham)}.	Recorded from ponds and some other spots with standing water.

Table-1: Continued

S.No.	Scientific names	Synonyms	Distribution in Northern areas	Habitat description
18.	<i>Orthetrum sabina</i> Drury, 1770	<i>Libellula sabina</i> Drury, 1770 <i>Libellula gibba</i> Fabricius, 1798 <i>Libellula leptura</i> Burmeister, 1839 <i>Libellula ampullacea</i> Schneider, 1845 <i>Lepthemis divisa</i> Selys, 1878 <i>Orthetrum nigrescens</i> Bartenev, 1929 <i>Orthetrum viduatum</i> Liefstinck, 1942	Gilgit {Gilgit (Juglote, Danyore)}.	In both the collection spots there was standing water with muddy and swampy areas around it.
19.	* <i>Orthetrum taeniolatum</i> Schneider, 1845	<i>Libellula taeniolata</i> Schneider, 1845 <i>Orthetrum hyalinum</i> Kirby, 1886 <i>Orthetrum brevistylum</i> Kirby, 1896 <i>Orthetrum garhwalicum</i> Singh and Bajjal, 1954	Baltistan {Skardu (Shangrilla)}.	Captured from standing as well as very fast moving water spots.
20.	<i>Orthetrum triangulare triangulare</i> Selys, 1878	<i>Libellula triangularis</i> Selys, 1878 <i>Libellula delesserti</i> Selys, 1878 <i>Libellula melanica</i> Selys, 1883 <i>Pseudothemis nigrifrons</i> Matsumura, 1898 <i>Orthetrum ganeshii</i> Mehrotra, 1961 <i>Orthetrum chandrabali</i> Mehrotra, 1961	Gilgit {Gilgit ( Juglote, Kashroat), Diamer (Chillas, Darail)}, Baltistan {Ghanche (Hushe, Chumick)}.	Specimens were collected from different standing water spots. They were not recorded from any running water spot in the visited areas.
21.	<i>Palpopleura sexmaculata sexmaculata</i> Fabricius, 1787	<i>Libellula sexmaculata</i> Fabricius, 1787	Baltistan {Skardu (Oolding)}.	
22.	<i>Pantala flavescens</i> Fabricius, 1798	<i>Libellula flavescens</i> Fabricius, 1798 <i>Libellula viridula</i> Palisot de Beauvois, 1805 <i>Libellula analis</i> Burmeister, 1839 <i>Libellula terminalis</i> Burmeister, 1839 <i>Sympetrum taidicola</i> Singh, 1955	Gilgit {Gilgit (Kashroat, Sultan abad)}.	The specimens were collected from variable spots i.e standing water spots, moving water spots, long grasses and dry branches of some dwarf plantations.
23.	* <i>Sympetrum commixtum</i> Selys, 1884	<i>Diplax commixta</i> Selys, 1884	Gilgit {Astor (Moorgulum, Gorikot)}.	Found flying and feeding around standing water areas.
24.	* <i>Sympetrum fonscolombei</i> Selys, 1840	<i>Libellula flaveola</i> , Fonscolombe 1837	Gilgit {Astor (Yougham, Boomroy, Pakora)}.	This is mountainous species and mostly found around standing water sitting in bushes and grass.
25.	* <i>Sympetrum meridionale</i> Selys, 1841	<i>Libellula meridionalis</i> Selys, 1841 <i>Libellula hybrida</i> Rambur, 1842 <i>Diplax meridionalis</i> Braur, 1868 <i>Sympetrum meridionalis</i> Meyer, 1874	Gilgit {Astor (Pakora, Gorikot)}.	Recorded from the dry branches of plants present along the margins of ponds and some small standing water points.
26.	<i>Traernea virginia</i> Rambur, 1842	<i>Libellula virginia</i> Rambur, 1842	Gilgit {Gilgit (Juglote), Ghizer (Saling)}.	Specimens were collected while they were perching in sunlight, earlier in the afternoon.
27.	<i>Trithemis aurora</i> Burmeister, 1839	<i>Libellula aurora</i> Burmeister, 1839 <i>Trithemis soror</i> Brauer, 1868 <i>Trithemis adelpha</i> Selys, 1878 <i>Trithemis fraterna</i> Albarda, 1881 <i>Trithemis congener</i> Kirby, 1890	Baltistan {Skardu (Skardu, Shegar)}.	The collection was done along the banks of streams. The specimens were busy in feeding, mating and hunting while flying near the muddy banks. The spot was also having grasses which were submerged in the stream water.
28.	<i>Trithemis festiva</i> Rambur, 1842	<i>Libellula festiva</i> Rambur, 1842 <i>Libellula infernalis</i> Brauer, 1865 <i>Trithemis proserpina</i> Selys, 1878	Gilgit {Gilgit (Danyore, Juglote)}.	Collected during mating, while sweeping the net blindly in the air with in a crop field.



Table: 2 Collected species of damselflies along with their synonyms, distribution and habitat description.

S.No.	Scientific names	Synonyms	Distribution in Northern areas	Habitat description
	<b>Chlorocyphidae</b> Cowley, 1937			
01.	* <i>Libellago greeni</i> Laidlaw 1924	<i>Micromerus greeni</i> Laidlaw, 1924	Gilgit {Gilgit (Danyore)}.	Recorded while mating within a grassy spot along moving water.
	<b>Coenagrionidae</b> Kirby, 1890			
02.	* <i>Mortonagrion gautama</i> , Fraser 1923	<i>Indagrion gautama</i> Fraser, 1922	Gilgit {Gilgit (Danyor)}.	Found in stagnant water pond at Danyore. The pond was surrounded by thick as well as thin long and dwarf vegetation. The species was recorded when it was busy in preying over minute insects.
03.	<i>Ceragrion coromandelianum</i> Fabricius, 1798	<i>Agrion coromandelianum</i> Fabricius, 1798 <i>Agrion cerinum</i> Rambur, 1842	Gilgit (Diamer (Darail, Chillas)).	Collected while hovering stagnant water and from vegetation grown aside water streams.
04.	<i>Enallagma cyathigerum</i> Charpentier, 1840	<i>Agrion cyathigerum</i> Charpentier, 1840 <i>Agrion annexum</i> Stephens, 1835 (nec Charpentier, 1825) <i>Agrion pulchrum</i> Hagen, 1840 <i>Agrion charpentieri</i> Selys, 1840 <i>Agrion annexum</i> Hagen, 1861 <i>Enallagma robustum</i> Selys, 1875 <i>Enallagma continentale</i> Belyshev, 1956 <i>Enallagma nigrolineatum</i> Belyshev and Haritonov, 1975	Baltistan {Ghanche ( Kharko, Yougo), Skardu (Shigar, Hussainabad, New Ranga, Olding, Sundus, Shangrila)}, Gilgit {Hunzanagar (Hunza)}.	The species was found feeding among the grasses and bushes present aside standing water lake and along slow moving water ways.
05.	<i>Ischnura aurora</i> Brauer, 1865	<i>Agrion aurora</i> Brauer, 1865 <i>Agrion delicatum</i> Hagen, 1876 <i>Ischnura delicata</i> Hagen, 1876 <i>Micronympha aurora</i> Kirby, 1890 <i>Nanosura aurora</i> Kennedy, 1920 <i>Ischnura bhimtalensis</i> Sahni, 1965	Gilgit (Diamer (Darail, Chillas)).	Found flying among thin vegetation present a little distant to water streams. Also collected while sitting on swampy places. Sometimes found between the submerged vegetation along streams and springs.
06.	<i>Ischnura elegans</i> Vander Linden, 1820	<i>Agrion elegans</i> Vander Linden, 1820 <i>Ischnura lamellata</i> Kolbe, 1885	Baltistan {Skardu (Gol, Shigar, Hussainabad, New Ranga, Olding, Sundus), Ghanche (Kharko)}, Gilgit (Diamer (Darel), Gilgit (Juglote, Danyore, Kashroat, Chinar Bagh), Ghizer (Saling)).	Collection was done from grassy vegetation around water spots
07.	* <i>Ischnura forcipata</i> Morton, 1907	<i>Ischnura musa</i> Bartenev, 1913 <i>Ischnura gangetica</i> Laidlaw, 1913 <i>Agriocnemis nainitalensis</i> Sahni, 1965 <i>Coenagrion needhami</i> Navas, 1933	Baltistan {Ghanche (Balghar, Kharko, Yougo, Khaplu, Surmo), Skardu (Gol, Satpara, Shigar, Hussainabad, New Ranga, Shangrila), }, Gilgit { Diamer (Chillas (Gonerfarn, Darel, Goru ), Gilgit (Chinar Bagh, Danyore, Sonikot, Juglote), Astor (Rama), Hunzanagar (Borath Lake), Ghizer (Gackuch Bala, Gackuch Zireen)}.	It is a common species of the region and thus collected from a variable number of ecological habitats including grasses growing among stagnant water and along running water, some times found among thick and dense vegetation present aside and a little away from water streams. Also found flying among small grasses present a little distant to water streams.
08.	<i>Ischnura senegalensis</i> Rambur, 1842	<i>Agrion senegalensis</i> Rambur, 1842 <i>Enallagma brevispina</i> Selys, 1876	Baltistan {Ghanche (Balgarg)}.	Caught from grassy and swampy spot.
	<b>Synlestidae</b>			
09.	<i>Megalestes major</i> Selys, 1962		Baltistan {Skardu (Oolding), Aliabad}.	Collection was done from spots with high grassy vegetation. Some specimens were collected along water side as well as some from nearby small mountains.

\* New record for Country

\* New record for Northern areas

## Check list of Odonata of Northern areas of Paksistan

### SUB ORDER ANISOPTERA

**Family: Aeshnidae** Rambur, 1842

Genus *Aeshna* Fabricius 1775

*Aeshna juncea* Linnaeus 1758

Genus *Anax* Leach, 1815

*Anax immaculifrons* Rambur, 1842

*Anax nigrolineatus* Fraser, 1935

*Anax parthenope* Selys, 1839

**Family: Cordulegasteridae** Calvert, 1893

Genus *Cordulegaster* Leach, 1815

*Cordulegaster brevistigma* Selys, 1854

**Family: Gomphidae** Rambur, 1842

Genus *Ophiogomphus* Selys, 1854

*Ophiogomphus reductus* Calvert, 1898

**Family: Libellulidae** Rambur, 1842

Genus *Acisoma* Rambur, 1842

*Acisoma panorpoides panorpoides* Rambur, 1842

Genus *Crocothemis* Brauer, 1868

*Crocothemis erythraea* Brulle, 1832

*Crocothemis servilia* Drury, 1773

Genus *Diplacodes* Kirby, 1889

*Diplacodes lefebvrei* Rambur, 1842

Genus *Libellula* Linnaeus, 1758

*Libellula quadrimaculata* Linnaeus, 1758

Genus *Orthetrum* Newman, 1833

*Orthetrum anceps* Schneider, 1845

*Orthetrum brunneum brunneum*

Fonscolombe, 1837

*Orthetrum cancellatum* Linnaeus, 1758

*Orthetrum chrysostigma luzonicum*

Burmeister, 1839

*Orthetrum glaucum* Brauer, 1865

*Orthetrum pruinsum neglectum* Burmeister, 1839

*Orthetrum sabina* Drury, 1770

*Orthetrum taeniolatum* Schneider, 1845

*Orthetrum triangulare triangulare* Selys, 1878

Genus *Palpopleura* Rambur, 1842

*Palpopleura sexmaculata sexmaculata*

Fabricius, 1787

*Pantala flavescens* Fabricius, 1798

Genus *Sympetrum* Newman, 1833

*Sympetrum commixtum* Selys, 1884

*Sympetrum fonscolombei* Selys, 1840

*Sympetrum meridionale* Selys, 1841

Genus *Traemea* Hagen, 1861

*Traemea virginia* Rambur, 1842

Genus *Trithemis* Brauer, 1868

*Trithemis aurora* Burmeister, 1839

*Trithemis festiva* Rambur, 1842

### SUB ORDER ZYGOPTERA

**Family: Chlorocyphidae** Cowley, 1937

Genus *Libellago* Selys, 1840

*Libellago greeni* Laidlaw 1924

**Family: Coenagrionidae** Kirby, 1890

Genus *Mortonagrion* Fraser, 1920

*Mortonagrion gautama* Fraser 1923

Genus *Ceriagrion* Selys, 1876

*Ceriagrion coromandelianum* Fabricius, 1798

Genus *Enallagma* Charpentier, 1840

*Enallagma cyathigerum* Charpentier, 1840



Genus *Ischnura* Charpentier, 1840  
*Ischnura aurora* Brauer, 1865  
*Ischnura elegans* Vander Linden, 1820  
*Ischnura forcipata* Morton, 1907  
*Ischnura senegalensis* Rambur, 1842

### Family: Synlestidae

Genus *Megalestes* Selys, 1862  
*Megalestes major* Selys, 1962

## References

- Ali, H. A. 1983. Study on the population and feeding habits of dragonflies on insect pests of cotton. M. Sc. thesis, Department of Agricultural Entomology, University of Agriculture, Faisalabad, Pakistan.
- Boyd, S. 2005. Damselflies and dragonflies. Scientific Illustration Major, University of Georgia, Athens. Accessed online at <http://www.discoverlife.org/nh/tx/Insecta/Odonata/>
- Clausnitzer, V. 2003. Odonata of African humid forests – a review, Cimbebasia, 18: 173 – 190, Georgia, Athens. Accessed online at <http://www.discoverlife.org/nh/tx/Insecta/Odonata/>
- Fraser, F. C. 1933. Fauna of British India (Odonata), Ceylon and Burma, Vol. 1. London: Taylor & Francis.
- Fraser, F. C. 1934. Fauna of British India (Odonata), Ceylon and Burma, Vol. 2. London: Taylor & Francis.
- Hussain, Z. 2006. Taxonomic studies of Odonata of district Gilgit and Astor, Northern Areas – Pakistan. M.Sc. thesis, University College of Agriculture Rawalakot, Pakistan.
- Jahangir, A. 1997. Taxonomic studies of Odonata of Gilgit and Baltistan areas. M.Sc. thesis, Department of Agricultural Entomology, University of Agriculture, Faisalabad, Pakistan.
- Najam, M. A. 1984. Population and feeding habits of dragonflies on insect pests of rice. M. Sc. thesis, Department of Agricultural Entomology, University of Agriculture, Faisalabad, Pakistan.
- Orr, A. G. 2003. A Guide to the Dragonfly of Borneo: Their Identification & Biology. Malaysia: Natural History Publications (Borneo).
- Pedigo, L. P. 2002. Entomology and pest management. 4<sup>th</sup> ed. Singapore: Pearson Education.
- Silsby, J. 2001. Dragonflies of the world. Washington, DC: Smithsonian Institution Press.
- Subramanian K. A. 2005. Dragonflies and damselflies of Peninsular India - A field guide. India: Indian Academy of Sciences.
- Survey of Pakistan, 1997. Atlas of Pakistan. Pakistan: Directorate of Map, Govt. of Pakistan.
- Trueman, J. W. H. and Rowe, R. J. 2001. Odonata (Dragonflies and Damselflies). Accessed online at <http://tolweb.org/tree?group=Odonata&contgroup=Pterygota>
- Wahizatul-Afzan A., Julia, J. and Amirrudin, A. 2006. Diversity and distribution of dragonflies (insecta: odonata) in Sekayu recreational forest, Terengganu. Journal of Sustainability Science and Management 1(2): 97-106.